REMARKS

Claim Status

Applicants acknowledge the indication that claims 5, 6, 14 and 19 contain allowable subject matter. Claims 1-20 were heretofore pending. The Specification has been amended. Claim 1, 4, 5, 8, 12 and 18 have been amended, with claims 4, 5, 8, 12 and 18 being amended to correct minor claim wording. Independent claims 21-23 have been added. These correspond, respectively, to dependent claims 5, 14, and 19 rewritten in independent form. Claims 2 and 17 have been canceled. No new matter has been added. Reconsideration of the application, as amended, is respectfully requested.

Objection to the Specification

The disclosure has been objected to based on the failure to include a description of Fig. 4 on page 15. In response to this objection, Applicants have amended the specification in a manner which is self explanatory. Accordingly, reconsideration and withdrawal of the objection are requested.

Brief Overview of the Invention

The present invention relates to an ink jet recording apparatus for forming an image on a recording medium (see pg. 4, 2nd paragraph of the originally filed specification). In the present invention, the temperature of the recording medium is controlled by a temperature controlling mechanism so as to be within a preset target temperature range. The temperature of the recording medium can thus be maintained substantially constant. As explained on page 5, 4th paragraph of the specification, jetted ink received on the recording medium can obtain a

temperature in which the ink is sufficiently cured, and the recording medium can obtain a temperature which is not adversely affected by the radiation of the active energy ray. As a result, the jetted ink that is received on the recording medium can be cured in a short time by the radiation of the active energy ray. This permits stabilization of the diameter of jetted ink dots that are received on the recording medium.

Patentability of the Claims under 35 U.S.C. §102

Claims 1, 2, 4, 17 and 20 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,523,948 ("*Matsumoto*"). Applicants have carefully considered the Examiner's rejection, and the comments provided in support thereof, and respectfully disagree with the Examiner's analysis. For the following reasons, Applicants respectfully assert that all claims of the present application distinguish the invention patentably over the cited reference.

Independent claim 1, as amended herein, recites the limitations "an ultraviolet radiation section for radiating an ultraviolet ray to the ink jetted on the recording medium to cure the ink; and a temperature controlling mechanism for controlling the temperature of the recording medium which is carried by the carrying section within a preset target temperature range". Thus, claim 1 now recites an ultraviolet radiation section and a temperature controlling mechanism.

Matsumoto relates to "an ink jet printer that comprises at least one ink jet head, including plural nozzles arranged in an array in a main scan direction, for ejecting a droplet of ink onto recording material at an ejected amount according to information of an image" (see col. 1, lines 55-60).

The Examiner contends:

> *Matsumoto* ... discloses a temperature controlling mechanism for controlling the temperature of the recording medium (figure 19, element: 160) (UV intensity control unit).

With respect to the foregoing, however, Fig. 19 of *Matsumoto* fails to disclose the temperature controlling mechanism recited in amended claim 1. The ultraviolet intensity adjuster 160 disclosed in *Matsumoto* is for adjusting the intensity of the ultraviolet rays, and is not for controlling the temperature of the recording medium in the manner of the temperature controlling mechanism recited in independent claim 1. *Matsumoto* (col. 14, lines 48-49) states the ink is cured by radiating ultraviolet rays 157 (see Fig. 19). It is apparent *Matsumoto* did not contemplate the advantage of heating the recording medium to improve curing of the ink. Thus, in *Matsumoto*, the need to use a temperature controlling mechanism in the context of its Fig. 19 to control the temperature of the recording medium is absent.

The present inventors have determined that the curing of an ultraviolet ray curable ink (e.g., cationic polymerization ink) depends upon temperature, and that it is difficult to cure an ultraviolet ray curable ink at low temperatures. *Matsumoto* fails to teach that the curing of an ultraviolet ray curable ink depends on temperature, and that it is difficult to cure an ultraviolet ray curable ink at low temperatures.

Fig. 1 of *Matsumoto* discloses a thermal head 22 for preheating the recording material 17. This thermal head 22 is for drying the ink on the recording medium in a short time, and for preventing the ink from adhering to a carrying roller, such as the roller 21 or the like. Fig. 1 of *Matsumoto* fails to disclose an ultraviolet radiation section for radiating ultraviolet rays to the ink. Consequently, *Matsumoto* fails to teach an ink jet recording apparatus having both an ultraviolet radiation section and a temperature controlling mechanism, as set forth in amended independent

claim 1. In view of the foregoing, reconsideration and withdrawal of the rejection under 35 U.S.C. §102 are in order, and a notice to that effect is earnestly solicited.

Moreover, based on the significant differences between the present claimed invention and Matsumoto, it is respectfully submitted that claim 1 is unobvious thereover under 35 USC 103.

Patentability of the Claims under 35 U.S.C. §103

Claims 3, 7 and 12 stand rejected under 35 U.S.C. §103(a) as being obvious over *Matsumoto* in view of U.S. Patent No. 6,746,115 ("*Tomotake*"), while claims 11, 13 and 16 stand rejected under 35 U.S.C. §103(a) as being obvious over *Matsumoto* in view of *Tomotake*, and further in view of U.S. Patent No. 6,460,990 ("*Yraceburu*"). Claims 8 and 9 stand rejected under 35 U.S.C. §103(a) as being obvious over *Matsumoto* in view of *Tomotake*, and further in view of EP 0 307 251 ("*Tasaki*"). For the following reasons, Applicants respectfully assert that all claims of the present application distinguish the invention patentably over the combination of the cited references.

Tomotake relates to a method for ink-jet image recording for improving glossiness, resistive friction and the smoothness difference between the image area and the non-image area (see col. 1, lines 7-9). However, *Tomotake* fails to cure the deficiency of *Matsumoto.* Specifically, *Tomotake* also fails to teach or suggest an ink jet recording apparatus having both an ultraviolet radiation section and a temperature controlling mechanism, as recited in amended independent claim 1.

Yraceburu relates to a non-warping heated platen that uses tight controls in the axial direction between a planar heater used to heat print media passing across the heater and a rigid planar base to which it is coupled (see Abstract). *Yraceburu* fails to cure the deficiency of the

system achieved by the combination of *Matsumoto* and *Tomotake*. Specifically, *Yraceburu* also fails to teach or suggest an ink jet recording apparatus having both an ultraviolet radiation section and a temperature controlling mechanism, as recited in amended independent claim 1.

Tasaki relates to an ink jet recording apparatus that is provided with a fixing heater for accelerating the fixation of ink deposited as a recorded image on a recording medium (see pg. 2, lines 8-10). However, the combination of *Tasaki* with *Matsumoto, Tomotake* and/or *Yraceburu* would still fail to achieve the system of the claimed invention, since *Tasaki* also fails to teach or suggest an ink jet recording apparatus having both an ultraviolet radiation section and a temperature controlling mechanism, as recited in amended independent claim 1.

Moreover, the present inventors have determined that curing an ultraviolet ray curable ink (e.g., cationic polymerization ink) also depends upon the humidity, and that it is difficult to cure the ultraviolet ray curable ink at high levels of humidity. Dependent claims 8 and 9 are directed to providing a humidity detecting section for detecting humidity around the recording medium. *Tasaki* fails to teach or suggest that the curing of the ultraviolet ray curable ink depends upon the humidity, and that it is difficult to cure the ultraviolet ray curable ink at high humidity. Accordingly, dependent claims 8 and 9 are also patentable for this additional reason.

Dependent claims

In view of the patentability of amended independent claim 1, for the reasons presented above, each of dependent claims 2-20 is patentable therewith over the prior art. In addition, each of the dependent claims serves to even more clearly distinguish the present invention over the prior art.

Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

A check in the amount $200.00 is enclosed in payment for the addition of 1 new independent claim in excess of three.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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